

1. A reactor for treating a hydrocarbon cut using a catalyst circulating in a moving bed, comprising at least one line for introducing a catalyst to the top of the reactor and at least one line for withdrawing catalyst located at the bottom of the reactor, and comprising at least one zone for treating the cut by a dehydrogenation reaction, said zone being provided with at least one line for introducing the cut, at least one line for withdrawing said treated cut and gaseous effluent, said zone further comprising at least one line for introducing a hydrogen-containing gas, wherein said zone for treating is located in the lower portion of the reactor, the upper portion comprising at least one catalyst reduction zone provided with at least one line for introducing hydrogen-containing gas.

2. A reactor according to claim 1, comprising a means for separating said zones to prevent the gases entering said zones from mixing.

3. A reactor according to claim 1, comprising, at the reduction zone, at least one line for withdrawing gaseous effluent from the reduction step, the reactor also comprising at least one means for separating said zones to prevent the gaseous effluents from the reduction step and the treatment zone from mixing.

4. An apparatus for producing aromatic compounds from a hydrocarbon cut using a catalyst circulating in a moving bed, comprising:

- at least one zone, the first zone, for the treating the cut involving a naphthene dehydrogenation reaction, said zone being provided with at least one line for

introducing the cut and at least one line for introducing a hydrogen-containing gas, and also comprising at least one gaseous stream withdrawal line;

- at least one subsequent treatment zone located after said first zone and comprising at least one line for supplying feed to said subsequent zone, and at least one line for withdrawing a gaseous effluent;
- at least one zone for separating catalyst, liquid product and gaseous hydrogen-containing effluent located after said treatment zones;
- at least one catalyst regenerating zone;
- at least one zone for reducing regenerated catalyst connected to said zone carrying out naphthene dehydrogenation such that the reduced catalyst enters said dehydrogenation zone, said reduction zone being provided with:
 - at least one line for introducing hydrogen-containing gas;
 - and at least one line for extracting a gas stream;
- at least one line for recycling at least a portion of the gaseous hydrogen-containing effluent from said separation zone to said zone carrying out the dehydrogenation reaction;

in which apparatus the line for withdrawing a gaseous stream from the reduction step is connected to at least one line supplying feed to the subsequent zone.

5. An apparatus according to claim 4, also comprising at least one line for recycling at least a portion of the gaseous hydrogen-containing effluent obtained from the separation zone to said reduction zone.

6. A reactor according to claim 1, comprising at the reduction zone, at least one line for withdrawing gaseous effluent from the reduction step, the reactor also comprising at least one means for separating said zones to prevent the gaseous effluents from the reduction step and the treatment zone from mixing.

7. An apparatus for producing aromatic compounds from a hydrocarbon cut using a catalyst circulating in a moving bed, comprising:

- at least one zone, the first zone, for treating the cut involving a naphthene dehydrogenation reaction, said zone being provided with at least one line for introducing the cut and at least one line for introducing a hydrogen-containing gas, and also comprising at least one gaseous stream withdrawal line;
- at least one subsequent treatment zone located after said first zone and
- comprising at least one line for supplying feed to said subsequent zone, and at least one line for withdrawing a gaseous effluent;
- at least one zone for separating catalyst, liquid product and gaseous hydrogen-containing effluent located after said treatment zones;
- at least one catalyst regenerating zone;
- at least one zone for reducing regenerated catalyst connected to said zone carrying out naphthene dehydrogenation such that the reduced catalyst enters said dehydrogenation zone, said reduction zone being provided with:
 - at least one line for introducing hydrogen-containing gas,
 - and at least one line for extracting a gas stream;

- at least one line for recycling at least a portion of the gaseous hydrogen-containing effluent from said separation zone to said zone carrying out the dehydrogenation reaction;

wherein the line for withdrawing a gaseous stream from the reduction step is connected to at least one line supplying feed to the subsequent zone, further comprising a reactor according to claim 1.